Commissioning Progress of the National Ignition Facility

Presentation to
International Workshop on Accelerator Alignment

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Work performed under the auspices of the U.S. Department of Energy
by the University of California, Lawrence Livermore National Laboratory
under Contract No. W-7405-ENG-48.

We are nearly halfway on the 1ω laser and preparing for the 3ω laser commissioning

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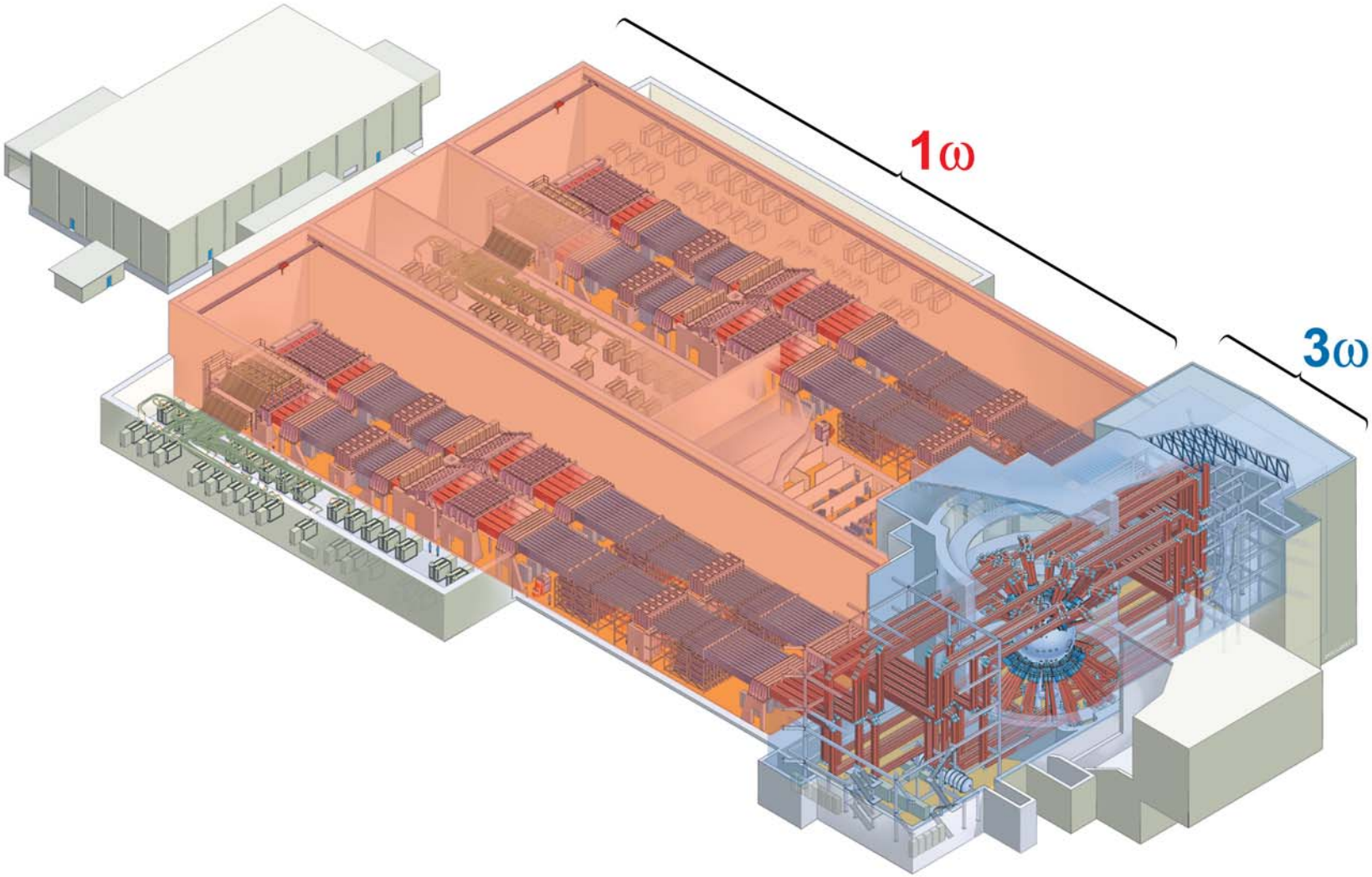
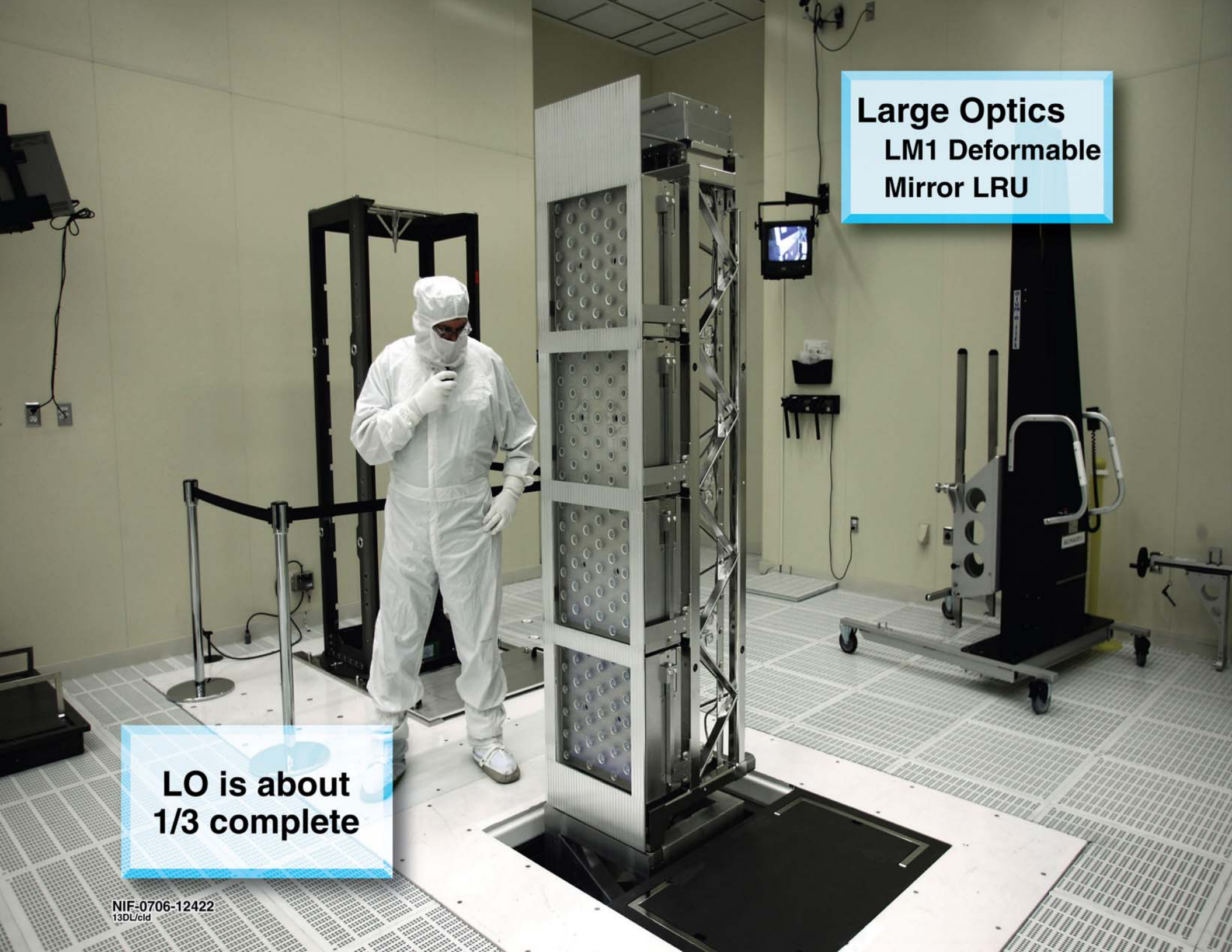


We are nearly 90% complete with our Laser Bay 2 installations
NIF-0906-12682
21SB/cld

NIF architecture is based upon beam-path infrastructure containing kinematically-mounted Line-Replaceable Units (LRUs)


Large Optics
LM1 Deformable
Mirror LRU
LO is about
1/3 complete
NIF-0706-12422
13DL/cld

Overall main laser commissioning status is 31% complete and on schedule

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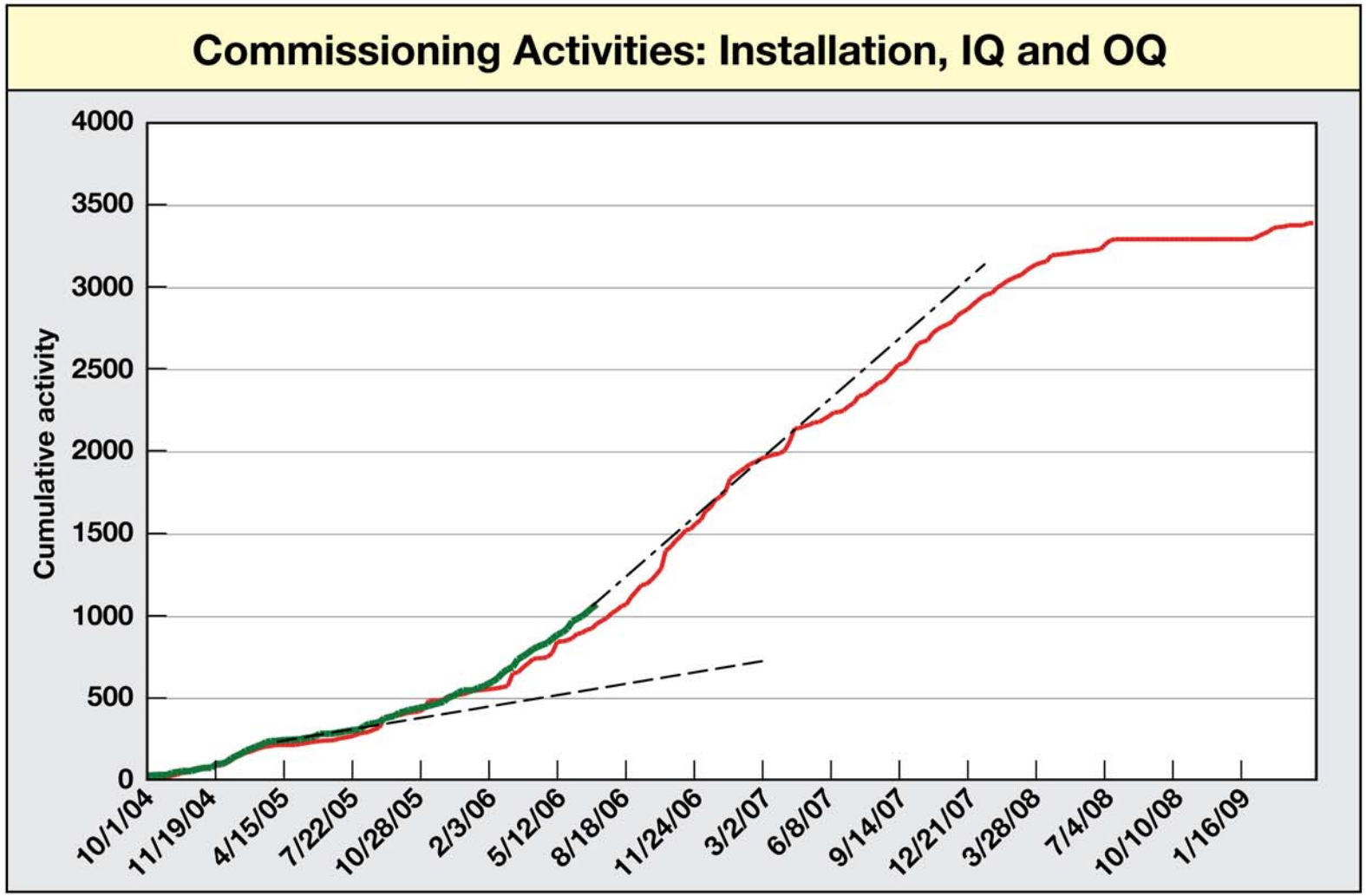
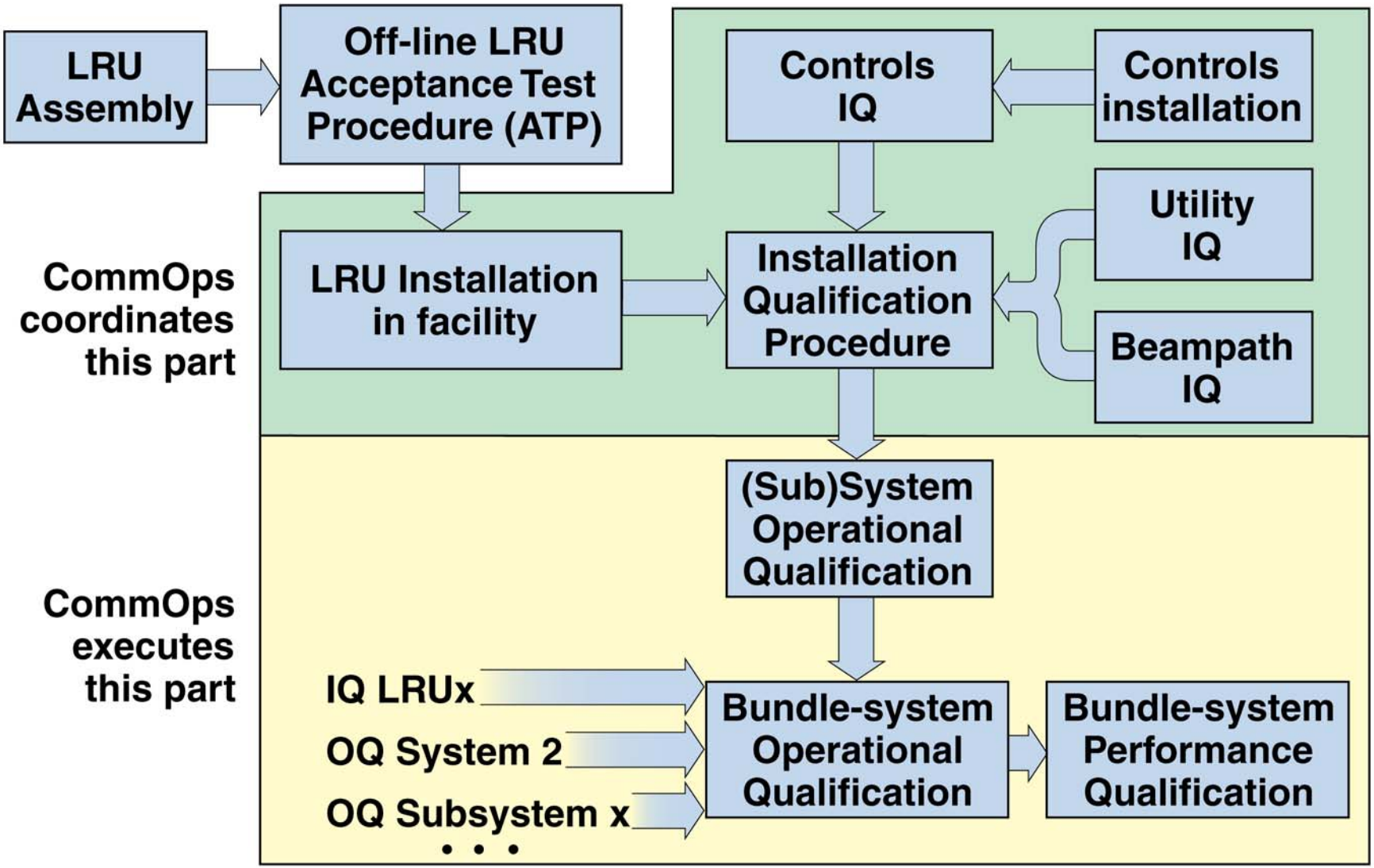
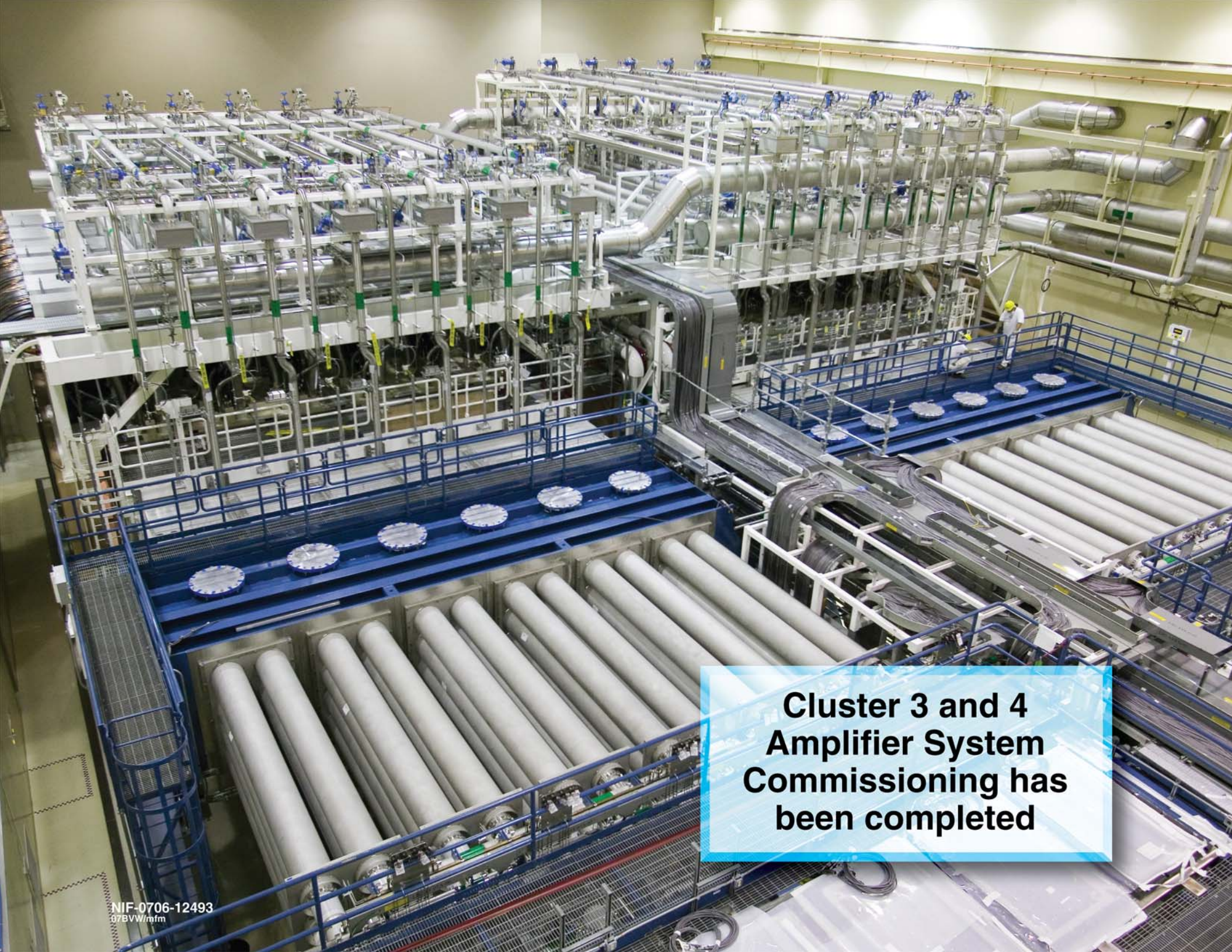


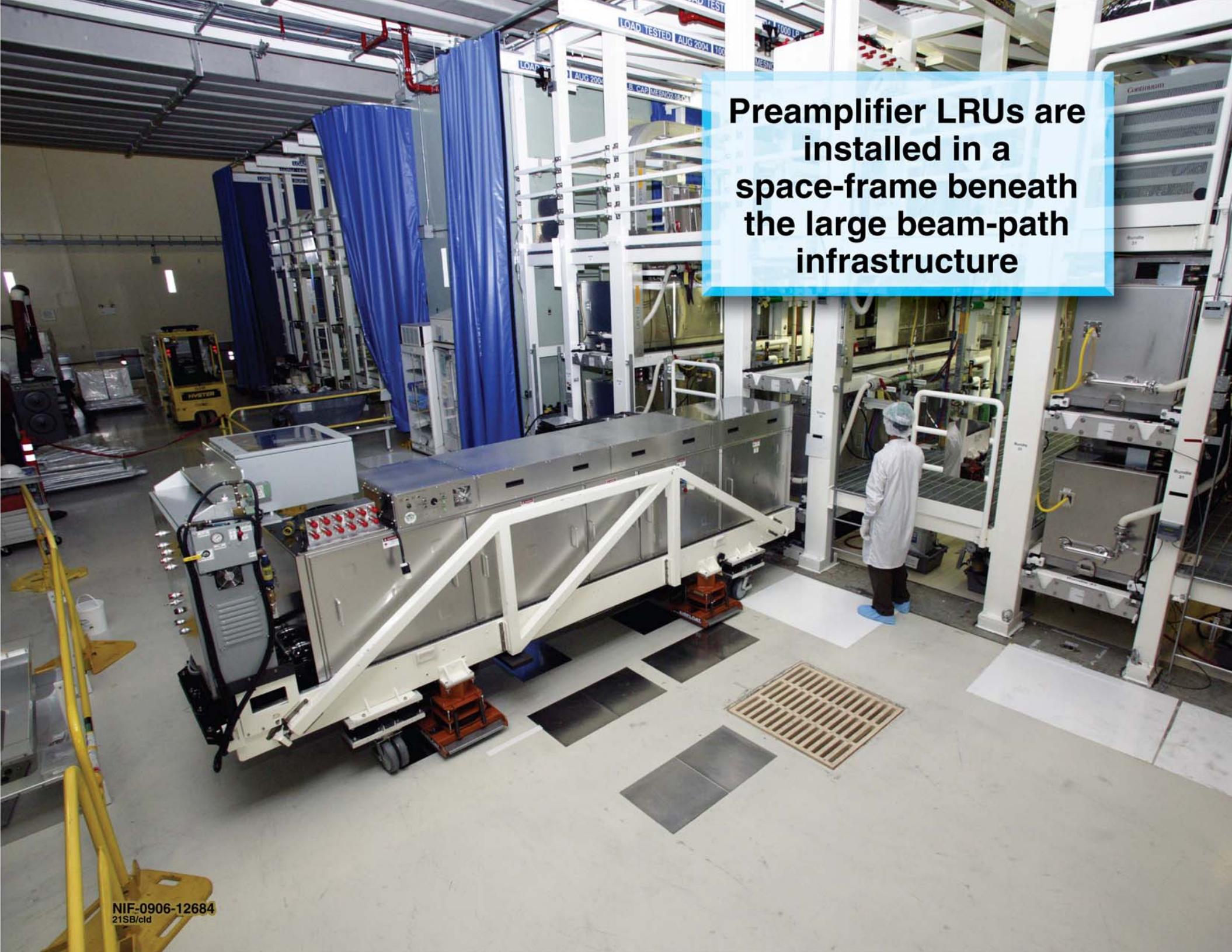
Commissioning rates have increased as planned

NIF-0706-12487

LRU installations and commissioning follow a disciplined test and qualification process




Cluster 3 and 4
Amplifier System
Commissioning has
been completed
NIF-0706-12493
07BVW/mfm



Preamplifier LRUs are installed in a space-frame beneath the large beam-path infrastructure

View of the NIF Target Chamber interior, Target Inserter, and Work Platform
NIF-0906-12687
21BVM/cld

Along with commissioning and installation, we conducted 130 system shots since last year

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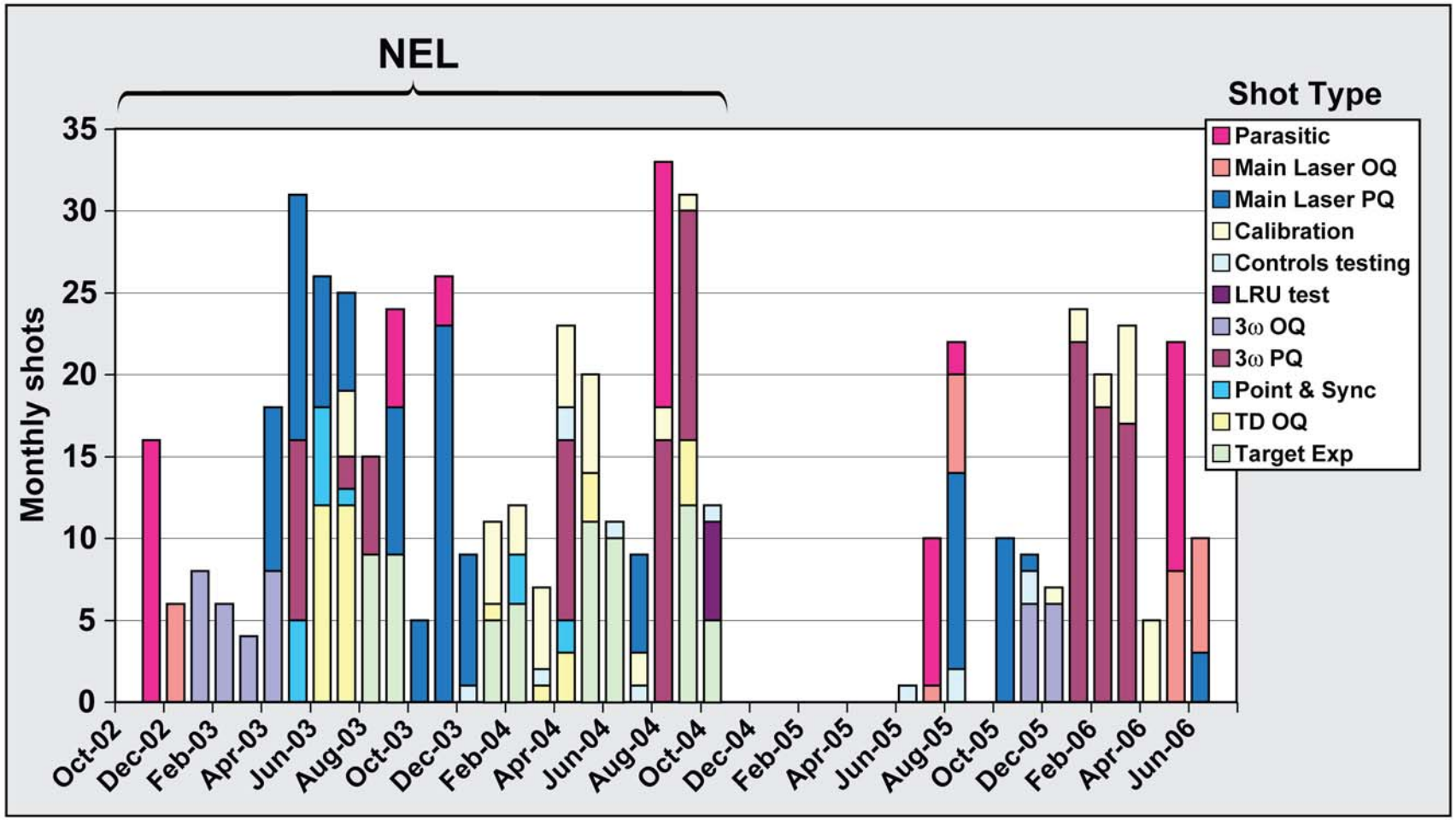

Commission lasers shots occur essentially every night

We completed the B31 main laser PQ, generating 150 kJ of 1ω light in a single shot

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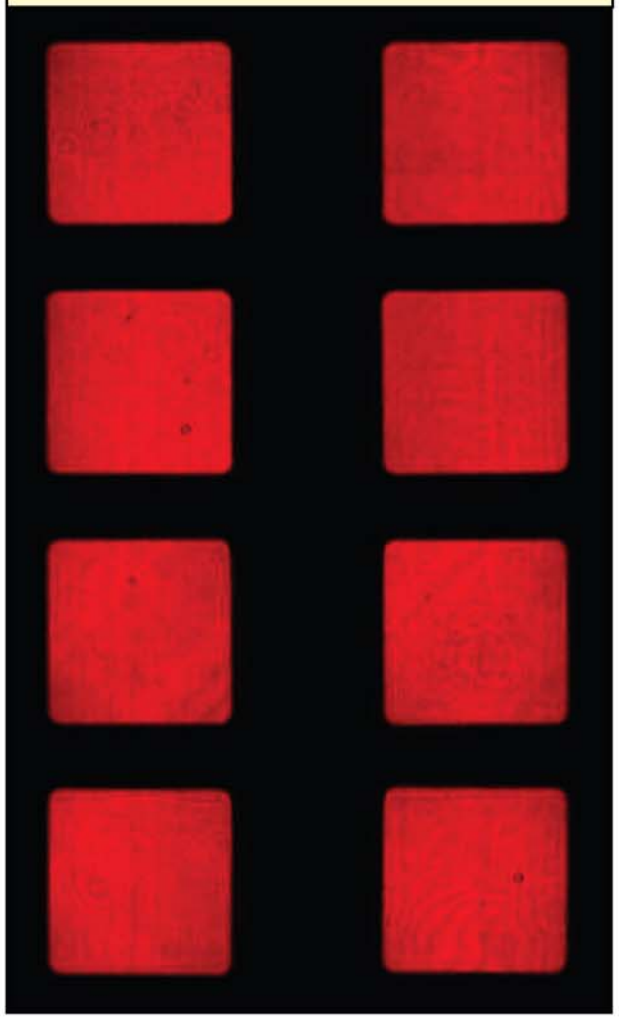
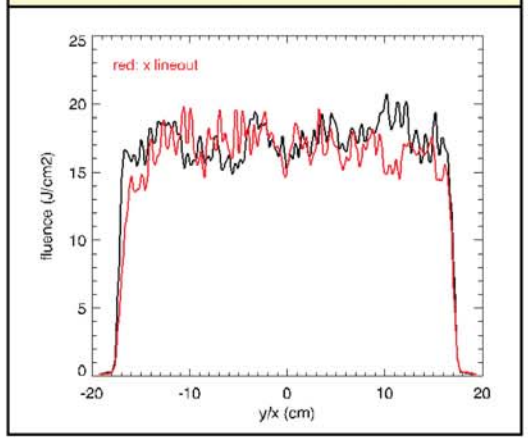
Near-Field Profiles for Bundle 31

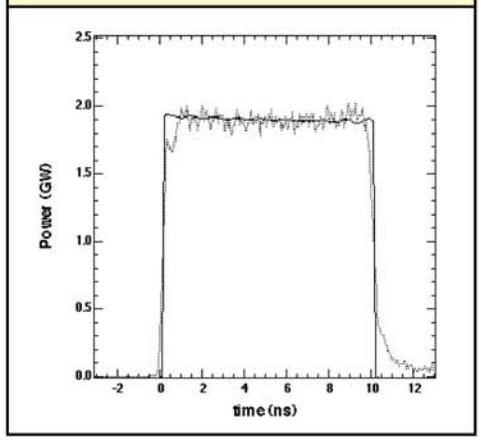


- 8 beamlines or 4% of NIF is operational at 1ω (August 2005)
- Maximum NOVA energy was 120 kJ 1ω

Fluence Variations (x and y lineouts)



Temporal Profile Measured vs. Requested



We also completed the B34 main laser PQ, generating 150 kJ of 1ω light

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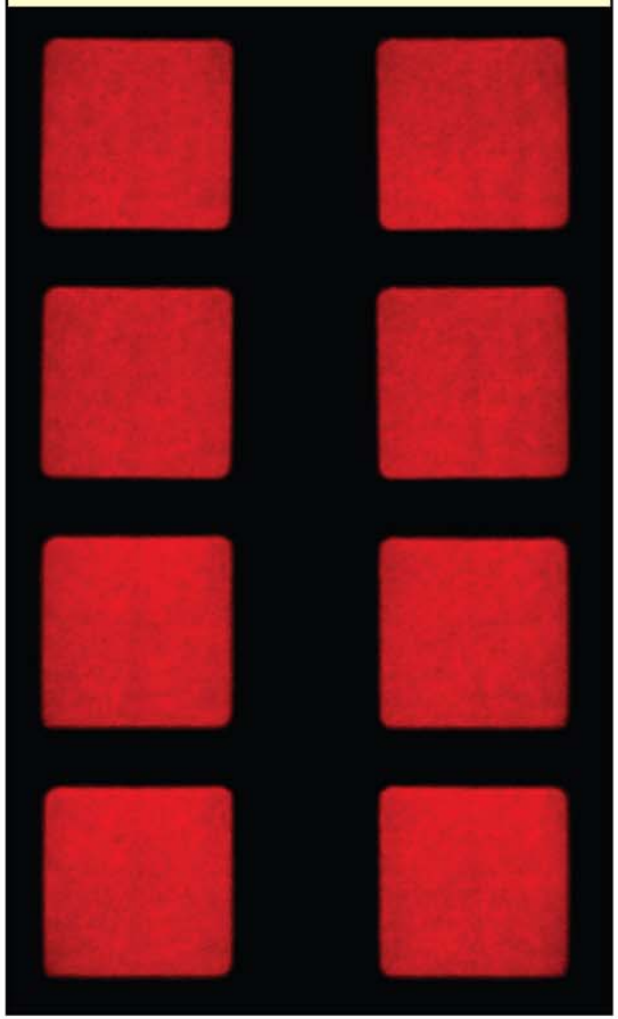
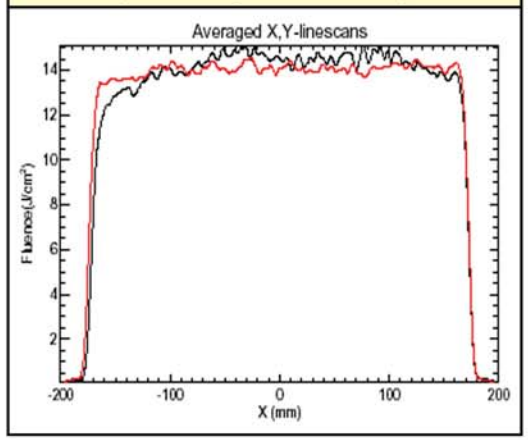
Near-Field Profiles for Bundle 34

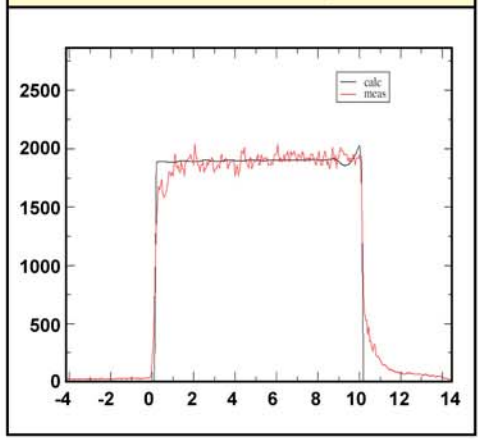


- **16 beamlines or 8% of NIF is operational at 1ω (June 2006)**

Fluence Variations (x and y lineouts)



Temporal Profile Measured vs. Requested



We completed over 80 shots in support of PDS performance campaigns

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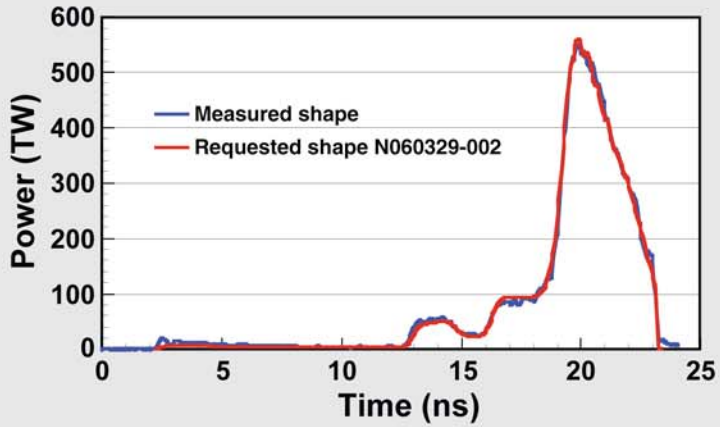
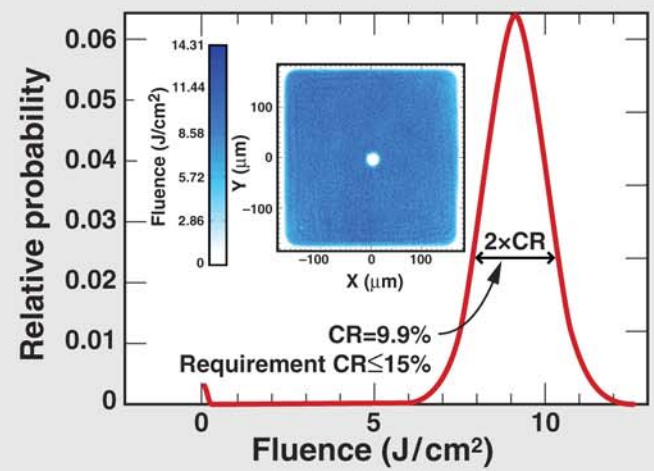
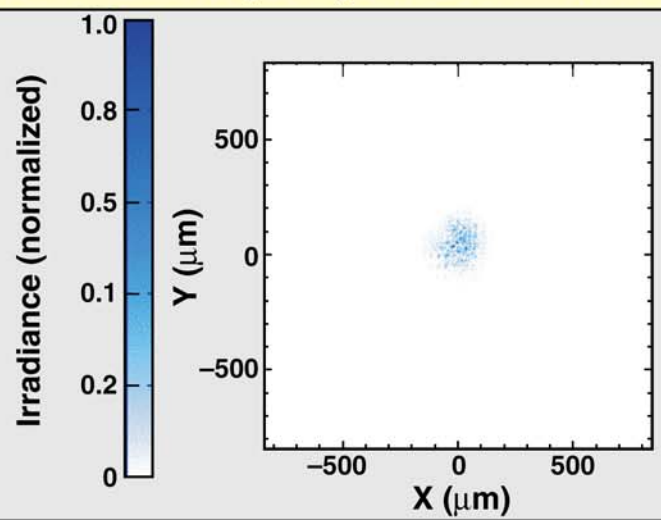
3ω Pulse Shape (355 TW)



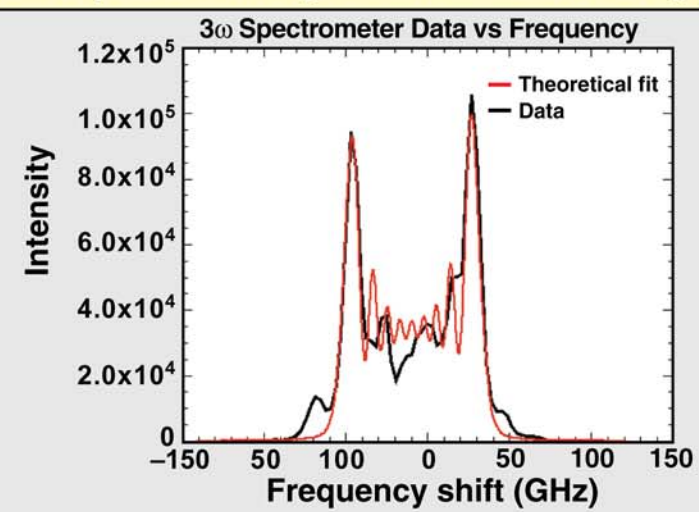
3ω Near Field Profile (CR = 9.9%)



3ω Focal Spot (0.145 mm FWHM)



3ω Spectrum (90 GHz SBS only)



NIF Project DOE Milestone Status (BCP 05 – 001)

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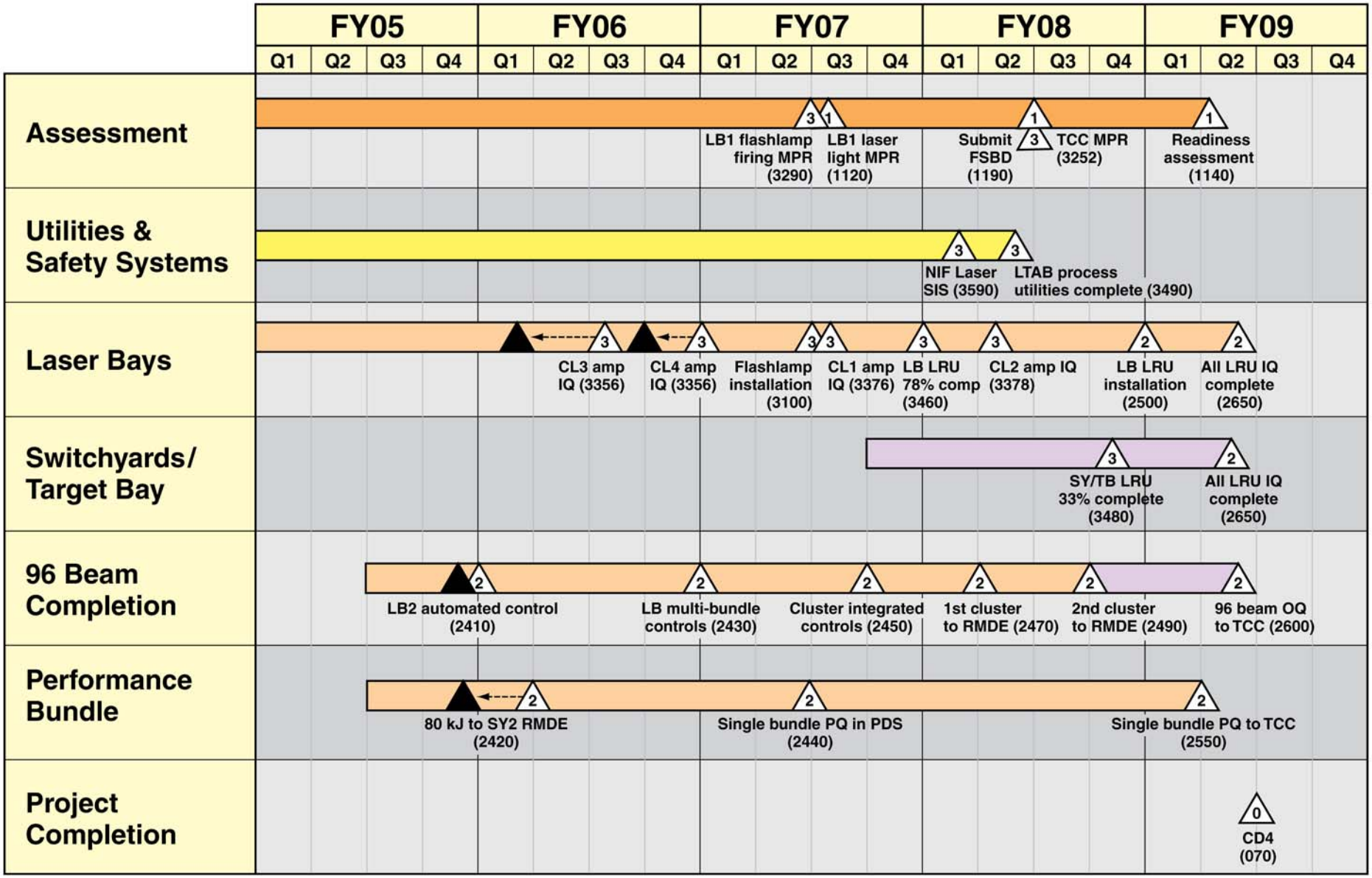

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